

REMARKS

On October 18, 2005, the Examiner conducted an interview with Applicant's counsel, for which Applicant gratefully acknowledges the Examiner's comments. In accordance with those comments, and with the Examiner's Interview Summary, Applicant provides the following Remarks:

Claim 1 has been amended to correct the inadvertent transposition of the words "port nontranslatable" to be "nontranslatable port." This error was unintentionally introduced in the amendment filed January 17, 2005. Claims 2 – 21 have not been amended in this Amendment and Response.

In the Office Action, claims 1 – 7 and 19 and were rejected under 35 U.S.C. § 103(a) as being unpatentable over Awadallah et al. (6,449,251 B1) in view of Boden et al. (6,615,357 B1) in further view of Stevens (TCP/IP Illustrated).

Claims 8, 10, 18, 20 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Awadallah et al. in view of Stevens.

Claims 9, 11, 12, 14, 15 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Awadallah et al. in view of Stevens and further in view of Boden et al.

The Examiner's rejections are the same as those previously advanced in the Office Action mailed July 14, 2004. Applicant respectfully traverses the rejections.

With respect to Claim 1, at p. 2 of the Office Action the Examiner states that the limitation:

"a network address translating gateway for detecting datagrams having process-specific nontranslatable port addresses and passing said datagrams through the gateway without translating their port addresses, said gateway connecting a LAN

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to an external network, said LAN using local IP addresses, said gateway having a local IP address that can be referenced by devices on said LAN and having an external IP address that can be referenced by devices on said external network" is disclosed by Awadallah on column 3, lines 57 – 59, 60 – 67; column 3, lines 48 – 56; and column 4, lines 1 – 8.

Applicant notes that Awadallah does distinguish between what is referred to as "reserved port numbers" or "reserved high priority ports" (col. line 53; col. 4, lines 6-7), and "known pre-assigned UDP (User Datagram Protocol) port (e.g., 7070)" (col. 1, lines 31-32). Awadallah's invention disclosure relates to its use of "high priority reserved ports," which may or may not include pre-assigned ports. Thus, although "pre-assigned" ports may fall within the scope of Awadallah's invention, there is nothing in the disclosure that distinguishes them or that treats them any differently than other "reserved high priority ports."

Awadallah's "pre-assigned" ports are treated no differently than any other high-priority reserved ports. Thus, Awadallah does not teach a gateway for detecting datagrams having process-specific port addresses. In addition, it is noted that Awadallah does not refer in any manner to port addresses that are "nontranslatable." Such datagrams are essential to claim 1, as datagrams having "nontranslatable" port addresses must be passed through the gateway without translation of the port addresses.

Because Awadallah neither detects nor suggests the detection of process-specific port addresses or of nontranslatable port addresses, Applicant believes that a person of ordinary skill in the art would not find it obvious to detect datagrams having process specific, nontranslatable port addresses based upon the cited prior art.

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Continuing to analyze claim 1, the Examiner states, at p. 3 of the Office Action, that the language of claim 1 that provides:

"means for delivering a datagram from a local device on said LAN to an external device on said external network by receiving a datagram from a local device on said LAN intended for delivery to an external device on said external network, and determining whether the destination port address for said datagram is included in said list of selected process-specific nontranslatable port addresses [and,] if said destination port address is not included in said list of selected process-specific port nontranslatable addresses, performing normal address translation upon said datagram and passing said datagram to said external network for routing and delivery to said external device"

is met by Awadallah on column 3, lines 48 – 56, 61 – 67 and column 4, lines 1 – 4. The Examiner further notes that Applicant's use of the term "process-specific port addresses" is not defined, and has therefore accorded to that term the broadest, most reasonable interpretation. According to the Examiner, "reserved port addresses meet the limitation of process-specific port addresses because these port addresses are reserved for a particular process." Office Action, p. 3.

The Examiner's observation, however, fails to account for applicant's amendments to claim 1, in which the adjective "nontranslatable" has been applied to further limit the element of "process-specific port addresses." As such, applicant's use of the terminology "process-specific nontranslatable port addresses" must be interpreted to cover only those port addresses that are reserved for a particular process and that are not to be translated

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during transit through the device of applicant's invention. The use of nontranslatable port addresses is not disclosed by Awadallah, is not suggested elsewhere in the prior art, and distinguishes applicant's invention from all of the prior art references cited by the Examiner.

At p. 4 of the Office Action, the Examiner states that the claim 1 limitation:

"and if said destination port address is included in said list of selected process-specific nontranslatable port addresses, determining whether said destination port address is bound to a local IP address, and if said destination port address is bound to a local IP address, performing normal address translation upon said datagram and passing said datagram to said external network"

is met by Stevens, Sec. 3.3, page 37 – 38, first paragraph.

Stevens does not disclose the detection of process-specific nontranslatable port addresses, and completely fails to teach the decision making process set forth in this limitation of claim 1. Indeed, paragraph 1 of Stevens Sec. 3.3 teaches only the basic rudiments of IP routing, *i.e.*, if the destination is connected directly to the host, the IP datagram is sent directly to the destination; otherwise, the host sends the datagram to a default router and lets the router deliver it. There is nothing disclosed in Stevens that suggests the limitation that a router detect datagrams having process-specific nontranslatable port addresses and, having detected such datagrams, determine whether or not to translate their port addresses depending upon whether the port address is bound to a local IP address. A person of ordinary skill in the art would not find this claim limitation obvious from the teachings of Stevens.

Also at p. 4 of the Office Action, the Examiner stated that the limitation of claim 1 that:

"and if said destination port address is not bound to a local IP address, passing said datagram through said gateway without translating said port addresses of said datagram, modifying said source IP address of said datagram to be said external IP address of said gateway, binding said destination port address to the local IP address of said local device and creating an association between said destination port address and the external IP address of said external device, and passing said datagram of said external network for routing and delivery to said external device"

is met by Steven in Section 3.3, page 37 -38, first paragraph.

As noted above, Stevens does not disclose the detection of process-specific nontranslatable port addresses, and does not teach the limitation set forth in this portion of claim 1. Paragraph 1 of Stevens Sec. 3.3 teaches only the basic rudiments of IP routing, but does not suggest the conditional passing through without port address translation of datagrams having process-specific nontranslatable port addresses where the condition is whether the port is bound to a local IP address. Stevens does teach the sending of a datagram directly to a destination, but explicitly limits this process to configurations in which the destination is directly connected to the host or is on a shared network with the host. Claim 1, on the other hand, applies to configurations in which "said gateway [connects] a LAN to an external network." Stevens does not address the concept of process-specific ports or nontranslatable ports, and a person of ordinary skill in the art would not find this claim limitation obvious from the teachings of Stevens.

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The combination of Stevens and Awadallah similarly fails to disclose this limitation, for reason previously stated: Neither Awadallah nor Stevens contemplates the detection of process-specific nontranslatable port addresses; neither Awadallah nor Stevens contemplates passing certain datagrams through without translating their port addresses when specified conditions are met. Applicant respectfully traverses the Examiner's rejection of claim 1 on the basis of the combination of the recited prior art.

The first paragraph of Sec. 3.3 of Stevens spans pages 37 and 38, and states:

"Conceptually, IP routing is simple, especially for a host. If the destination is directly connected to the host (e.g., a point-to-point link) or on a shared network (e.g., Ethernet or token ring), then the IP datagram is sent directly to the destination. Otherwise the host sends the datagram to a default router, and lets the router deliver the datagram to its destination. This simple scheme handles most host configurations."

The language cited above does not teach or suggest the step of applicant's invention of determining "if said destination port address is included in said list of selected process-specific nontranslatable port addresses" nor the step of "determining whether said destination port address is bound to a local IP address," both of which are limitations of applicant's invention that must be followed before the datagram is sent to a default router for delivery to its destination. Nor does any other language in Sec. 3.3 of Stevens disclose or teach this limitation of claim 1.

The Examiner also stated that the limitation "and if said destination port address is not bound to a local IP address, passing said datagram through said gateway without translating said port addresses of said diagram, modifying said source IP address of said datagram to be said external IP address of said gateway, binding said destination port

address to the local IP address of said local device and creating an association between said destination port address and the external IP address of said external device, and passing said datagram to said external network for routing and delivery to said external device" is met by Stevens, Sec. 3.3, page 37 – 38, 1st paragraph.

Stevens, quoted above, does not teach or suggest any of the limitation of claim 1 of (i) determining whether the destination port address is bound to a local IP address; (ii) passing the datagram without translating its port addresses; (iii) binding the destination port address to the local IP address of the sending device; or (iv) creating an association between the destination port address and the external IP address of the external device. There is no language of Stevens cited by the Examiner, or existing in the Stevens reference, that discloses these numerous limitations of applicant's invention.

On page 5, first paragraph, the Examiner comments that "the IP routing procedure is a basic routing procedure performed by a router/gateway to a host that is either within a LAN or that needs to be reached outside of the LAN through a router/gateway." Contrary to the Examiner's observation, the routing procedure of applicant's invention bears no similarity to a "basic routing procedure." Rather, applicant's invention applies a number of nonobvious limitations to a basic routing procedure to ensure that datagrams having nontranslatable, process-specific port addresses are passed through the gateway without translation (or swapping) of port addresses when the port address is not otherwise bound to a local IP address. Nothing in the prior art, and specifically in Adawallah, Bodin, or Stevens, or any combination of them, teaches or suggests these limitations of claim 1 of applicant's invention. Because the limitations of claim 1 are not disclosed, and would not

be obvious to a person of ordinary skill in the art in light of the combination of Stevens and Awadallah, claim 1 should be found to be patentable.

Claims 2 – 7 are dependent upon claim 1. If claim 1 is patentable, then claims 2 – 7 are likewise patentable.

With respect to independent claim 8, at p. 10 of the Office Action, the Examiner's recitation of relevant language from claim 8 is garbled and does not correctly repeat the claim that Applicant presented. The limitation from claim 8 is correctly stated as follows:

"maintaining a plurality of tables associating local IP addresses of local devices on said LAN, external IP addresses of external devices on said external network, port addresses of said external devices, SPI-In values, SPI-Out values, and process-specific port addresses, and a list of selected process specific port addresses to which datagrams can be passed without translating their port addresses . . ."

According to the Examiner, this claim limitation is met by Awadallah, column 2, lines 26 – 29, 62 – 64, column 3, lines 64 – 67 and column 4, lines 1-4.

Claim 8 requires the maintenance of a list of process specific port addresses to which datagrams can be passed without translating their port addresses. This limitation is not disclosed by Awadallah, which translates ("substitutes") port addresses for all datagrams. A person of ordinary skill in the art would not find it obvious to maintain a list of process specific port addresses to which datagrams can be passed without translating their port addresses.

Also on p. 10 of the Office Action, the Examiner stated that the limitation of claim 8 of:

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"determining whether the destination port address for said datagram is included in said list of selected process-specific port addresses and, if said destination port address is not included in said table of reserved port addresses, performing normal address translation upon said datagram and passing said datagram to said external network for routing and delivery to said external device"

is met by Awadallah, column 3, lines 61 – 67, column 4, lines 1 – 4. According to the Examiner, "reserved port addresses" meet the limitation of process-specific port addresses because these port addresses are reserved for a particular process.

The Examiner's observation fails to give proper recognition to the claim term "said" in the phrase "said list of selected process-specific port addresses." The term "said" refers back to its antecedent basis, which is, "a list of selected process specific port addresses to which datagrams can be passed without translating their port addresses . . ." Recognition of the antecedent basis requires the words "said list of process specific port addresses" to include the limitation that such port addresses are those "to which datagrams can be passed without translating their port addresses." When properly construed as described, this limitation is not suggested or disclosed by Awadallah, and a person of ordinary skill in the art would not find the limitation to be obvious from the teachings of Awadallah.

At p. 11 of the Office Action, the Examiner stated that the limitation of claim 8, of:

"and if said destination port address is included in said list of selected process-specific port addresses, determining whether said destination port

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address is bound to an IP address, and if said destination port is bound to an IP address, performing normal address translation upon said datagram and passing said datagram to said external network, and if said destination port address is not bound to an IP address, passing said datagram through said gateway without translating the port addresswes in said datagrtam, modifying said source IP address to be said external IP address for said external device, binding said destination port address to the local IP address of said local device and creating an association between said destination port address and said external IP address of said external device, and passing said datagram to said external network for routing and delivery to said external device”

is met by Stevens, Section 3.3, page 37 – 38, first paragraph. According to the Examiner, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Stevens within the system of Awadallah because the IP routing procedure is a basic routing procedure performed by a router/gateway to a host that is either with a LAN or that needs to be reached outside of the LAN.

Contrary to the Examiner’s conclusion, the stated limitation of claim 8 does not constitute a normal routing procedure. Rather, the limitation requires the router/gateway to first determine whether the destination port address of a datagram is included in “said” list of selected process-specific ports – which, as noted above, comprise ports to which datagrams can be passed without translating their port addresses. Nothing in Stevens or Awadallah remotely suggests or discloses the maintenance or determination of nontranslatable port addresses. Next, if the router/gateway determines that the

destination port address is included in the list of process specific nontranslatable ports, it will check to see whether that port is "bound" to an IP address. The process of "binding" a port is not disclosed in either Stevens nor in Awadallah.

The concept of "binding" a port is explained in the specification, at p. 9, line 21 – page 11, line 16. After a datagram from the LAN containing a nontranslatable destination port address has passed through the gateway without the port address having been translated, the gateway will "bind" that port address to the local IP address from which the datagram originated. Specification, p. 9, line 21 – p. 10, line 3. While the port address is "bound," the gateway will not "pass through" (without translating) any other datagram from the LAN having the same nontranslatable port address, although it will process other datagrams normally. Specification, p. 10, lines 13 – 15. If it should receive a second datagram from the LAN having the "bound" port address, it will translate the port address normally, and send the datagram to the external network. This datagram will not be accepted by the intended remote host because the nontranslatable port address has been translated. Hence, the datagram will effectively be lost or discarded. Specification, p. 10, line 19 – p. 11, line 2. The "bound" port will remain bound until the occurrence of the earliest of three possible contingencies: First, the gateway may receive a datagram from the external network having a destination port address as the "bound" port address. If this should happen, the gateway will check to see whether the datagram is destined for the local host whose IP address has been "bound" to the port. If that is the correct IP address, the datagram will be passed through to the LAN without translating the port addresses, and will "unbind" the bound port. Specification, p. 11, lines 6 – 12. Second,

the gateway may time out. Specification, p. 11, lines 2 – 5. Lastly, the gateway may be reset. Specification, p. 10, lines 8 – 10.

Nothing in either Awadallah or Stevens discloses or even suggests the process whereby a port of a router/gateway may be "bound." A person of ordinary skill in the art would not find "binding" to constitute normal address translation, and would not find "binding" to be obvious in view of the combination of Awadallah and Stevens.

In addition to the concept of "binding" not being disclosed or made obvious by the combination of Stevens and Awadallah, other limitations in the cited language of claim 8 are also not obvious in view of the references. In the limitation, the router/gateway, after determining that the destination port is not bound to an IP address, will pass the datagram through the gateway without translating the port addresses; and will "bind" the destination port address (this is a process-specific nontranslatable port address) to the local IP address of the sending host, and will create an association between the port address and the external IP address of the external device. None of these steps is disclosed or suggested by Awadallah or Stevens, and a person of ordinary skill in the art would not find these steps to be obvious in light of the combination of Stevens and Awadallah.

Because the limitations of claim 8 are not disclosed, and would not be obvious to a person of ordinary skill in the art in light of the combination of Stevens and Awadallah, claim 8 should be found to be patentable.

Claim 9 depends from claim 8. If claim 8 is found to be patentable, then claim 9 should also be determined to be patentable.

At p. 12 of the Office Action, the Examiner found claim 10 to be "the reverse of claim 8," hence, found that the grounds for the rejection of claim 8 stand equally for the rejection of claim 10. As demonstrated herein, claim 8 is patentable over the cited prior art. Likewise, claim 10 is also patentable over the cited prior art, on the same grounds as those provided with respect to claim 8.

At p. 13 of the Office Action, the Examiner stated that the claim 18 limitation of:

"determining whether the destination port address for said datagram is included in said list of selected process-specific port addresses and determining whether said destination port address is bound to a local IP address on said LAN; and if said destination port address is not included in said list of selected process-specific port addresses, performing normal address translation upon said datagram and passing said datagram to said external network for routing and delivery to said external device"

is met inherently by Awadallah on column 3, lines 61 – 67 and column 4, lines 1 – 4.

Contrary to the Examiner's statement, Awadallah does not inherently or otherwise disclose the limitation of "determining whether said destination port address is bound to a local IP address on said LAN . . ." The Examiner does not explain how Awadallah "inherently" discloses the limitation, and points to nothing that necessitates a finding of inherency in the Awadallah disclosure. As noted above, Awadallah does not suggest the concept of "binding." A person of ordinary skill in the art would not find that Awadallah inherently makes obvious the cited limitation of claim 8. Awadallah does not "bind" ports, but merely "[handles] port number mapping and swapping . . . so as to use a range

of high priority ports for high priority traffic that employs dynamic port assignment . . ."

Awadallah, col. 3, line 66 – col. 4, line 4.

Also on p. 13 - 14 of the Office Action, the Examiner stated that the limitation of claim 18, that

"and if said destination port address is included in said list of selected process-specific port addresses, and said destination port address is bound to a local IP address, performing normal address translation upon said datagram and passing said datagram to said external network; and if said destination port address is not bound to a local IP address on said LAN, modifying said source IP address of said datagram to be said external IP address of said gateway, binding said destination port address to the local IP address of said local device and creating an association between said destination port address and the external IP address of said external device, and passing said datagram to said external network for routing and delivery to said external device without translating said port addresses of said datagram"

is met by Stevens, Sec. 3.3, page 37 – 38, first paragraph.

As noted above, Stevens does not disclose the limitation of determining whether a destination port address is "bound"; nor does Stevens disclose the limitation that, if the destination port address is not bound to a local IP address the datagram will be passed through the router/gateway without translating the port address. The Examiner's conclusion that it would have been obvious for a person of ordinary skill in the art to combine the teachings of Stevens within the system of Awadallah fails to explain how the {M2302340;2}

hypothetical person of ordinary skill in the art would have known to determine whether a port address was bound to an IP address, or to make decisions whether to pass the datagram without translating the port address based upon whether the port address was bound or not. Neither Awadallah nor Stevens discloses the concept of binding, neither teaches decision making based upon it, and neither discloses or suggests that some datagrams should be passed through the gateway without having the port addresses translated.

Claims 19 – 21 are dependent claims that will be patentable if the underlying independent claims are patentable.

Because all independent claims (claims 1, 8, 10 and 18) are patentable, the dependent claims are likewise patentable, and the Examiner's rejections of dependent claims is respectfully traversed.

Applicant respectfully submits that claims 1–12, 14–15, and 17–21 are patentable over the prior art of record, and prays for the issuance of a Notice of Allowance.

Respectfully submitted,



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